

**WARNING/HINT:** READ THE ENTIRE QUESTION BEFORE BEGINNING YOUR ANSWER TO PART (A).

You are participating in the design of a medical experiment to investigate whether or not a protein supplement in the diet will increase a person's stamina on a treadmill test. 200 volunteers have been recruited to be a part of the study. It is thought that the age of the volunteers might make a difference in the effect of the supplement. The scientists that are in charge of the study believe that the supplement is equally effective on males and females.

a) Explain how you would carry out a completely randomized experiment for the study, in which exactly half of the volunteers are assigned the protein supplement, and the other half of the volunteers are assigned to a control group. *(again, please read the entire problem before beginning your response!)*

b) The “scientists” in charge of this study have decided that they would like to improve the design of their experiment by incorporating blocking. However, they not brushed up on their statistical theory in a very long time, and are not sure whether they should block by the age of the volunteers, or by the gender of the volunteers. Explain which one of the two variables they should choose use as a blocking variable, and why.

c) Describe the **changes** that would be made to your experiment in part (a) by incorporating blocking.

d) Can the experimental design in (a) be carried out in a double blind manner? Explain.